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PROPOSED JTIDS SOFTWARE ACQUISITION PLAN WITH EMPHASIS ON NAVY--ETC(U)
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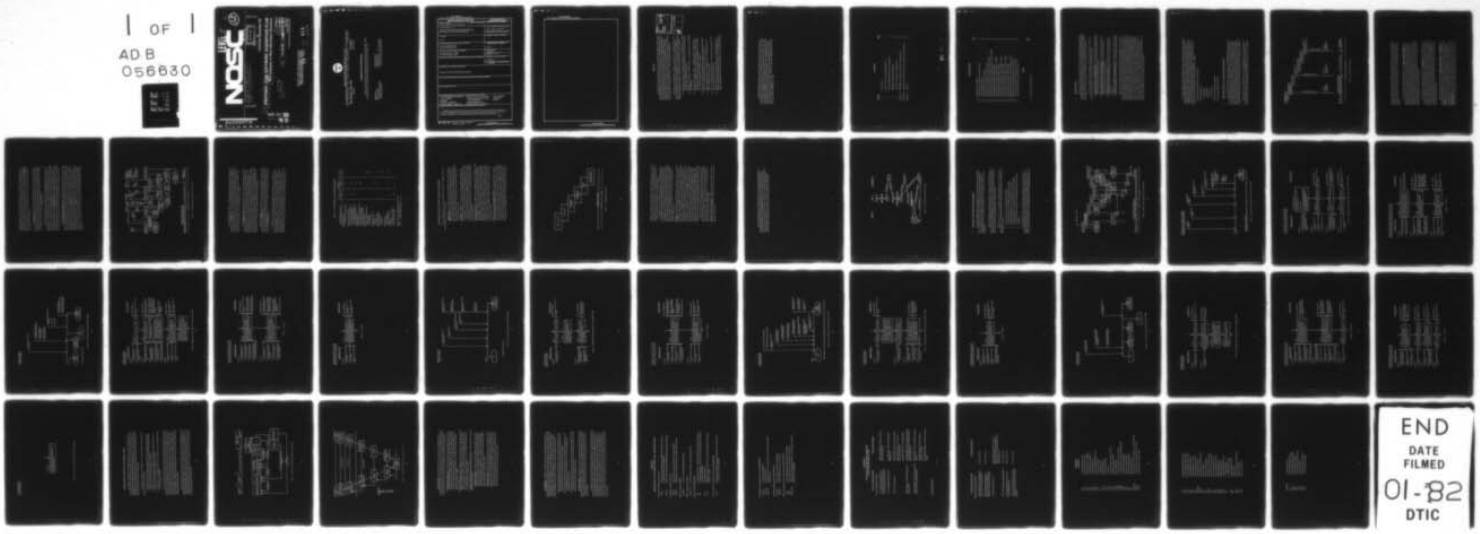

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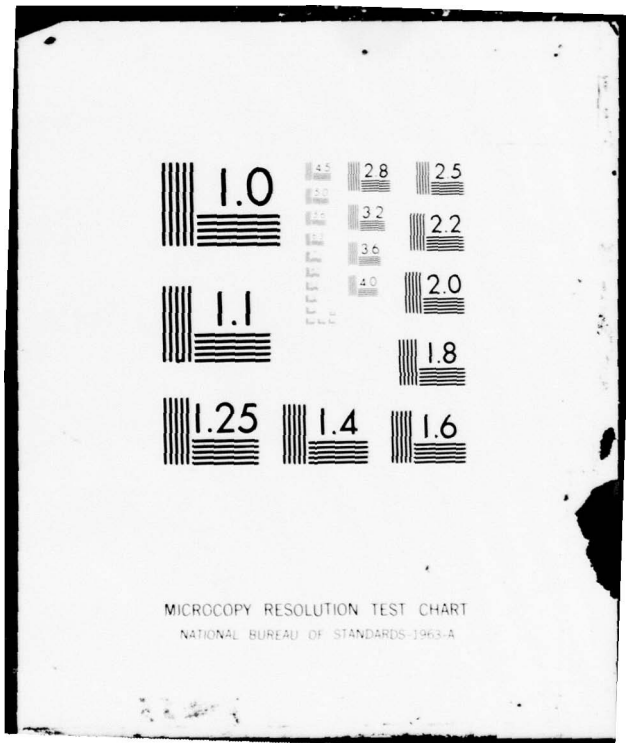
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(6) # PROPOSED JTIDS SOFTWARE ACQUISITION PLAN

With Emphasis on Navy Instructions/Directives

(10) JT. Shen

(11) 5 May 1978

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JTIDS and Naval Air Development Center

NAVAL OCEAN SYSTEMS CENTER
SAN DIEGO, CALIFORNIA 92152

NAVAL OCEAN SYSTEMS CENTER, SAN DIEGO, CA 92152

AN ACTIVITY OF THE NAVAL MATERIAL COMMAND

RR GAVAZZI, CAPT, USN
Commander

HL BLOOD
Technical Director

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Validation

20. ABSTRACT *(Continue on reverse side if necessary and identify by block number)*

Designed to provide guidance to Navy personnel involved in software acquisition and management, this document contains sections on software life-cycle and major milestones; software planning within a system acquisition; managing the software development; and verification, validation, and certification.

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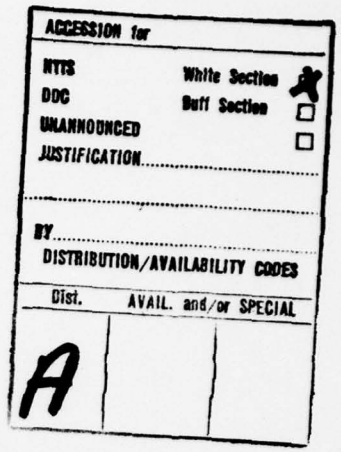
PREFACE



This report has been prepared for use in the acquisition processing of Joint Tactical Information Distribution System (JTIDS) terminal software. Although each project entailing the acquisition of system software has unique factors which impose special handling in the software acquisition management process, DoD and Navy acquisition management standards and directives are, of necessity, documented for the general case. For similar reasons and possible wider applicability, this plan is also presented in general terms, except for its emphasis on the Navy-unique aspects of software acquisition management.

It is, however, recognized that conditions, requirements, or constraints that create acquisition management or development problems unique to a specific acquisition do create a need for special solutions or handling. This is certainly true of the JTIDS software acquisition management, which is complicated by a number of factors. These include:

(a) Multiservice acquisition. Concurrent development of JTIDS segments by Navy and Air Force (see appendix B for equivalent Navy and Air Force acquisition management standards and directives).

(b) Multiagency development within the Navy; ie, separate projects for NAVELEX and NAVAIR.

(c) Two-phase development. Phase I – JTIDS terminals with Time Division Multiple Access (TDMA) for the architecture; Phase II – JTIDS terminals with Distributed Time Division Multiple Access (DTDMA) for the architecture, including compatibility with Phase I terminals.

(d) Multiclass terminals and multiplatform installation; ie, Class I terminals for ships (CV) and Class II terminals for aircraft (F-14 and E-2C).

(e) Multiple-JTIDS interfaces. (1) JTIDS terminal to JTIDS Interface Unit (JIU); (2) JIU to Operational System.

(f) Need for JTIDS interoperability with tactical data systems using other communication architecture; eg, TADIL-A.

(g) Software development time-frame differences; ie, embedded software for JTIDS terminals requires development earlier in the overall JTIDS system acquisition management cycle than the software for the user operational system.

Notwithstanding the uniqueness of the preceding factors, this report has been kept on a general level, as stated earlier, in order to present the "what" and "when" of Navy software acquisition management in general terms. A subsequent report will show "how" software acquisition management can be strengthened by the use of techniques that provide improved analysis and verification throughout the acquisition cycle, particularly in the early stages and as part of reviews and audits scheduled at intervals throughout the acquisition cycle. That report will present the "how" of software acquisition management on both the "general" and the "JTIDS-unique" levels.

CONTENTS

ILLUSTRATIONS

TABLE

1. INTRODUCTION

This report is designed to assist in the interpretation and application of appropriate DoD Military Standards and Navy Regulations, thereby presenting a methodology for JTIDS software development and acquisition management. The material is based on the established Navy Directives and Instructions and the DoD military standards listed in appendix A.

This plan is designed to provide guidance to Navy personnel involved in software acquisition and management. This report contains the following sections:

- Software Life-Cycle and Major Milestones • A description of the software life-cycle phases from conception through operational usage, including the identification and relative timing of the major milestones (section 2).
- Software Planning Within a System Acquisition • A breakdown of the conceptual phase describing the activities and responsibilities involved in the initial Navy planning and acquisition of software (section 3).
- Managing the Software Development • A breakdown of the development phases summarizing the activities and responsibilities of the Navy and the contractor(s) (section 4).
- Verification, Validation, and Certification • A description of the activities, responsibilities, and phasing of a verification, validation, and certification effort (section 5).

Applicable Navy directives and manuals are identified throughout the text in this plan. These documents define the sequence and relative time phasing of the reviews, audits, and other major milestones only in a general sense; the specifics required to relate these activities to a detailed development schedule are not identified in the referenced documents. The referenced documents address both systems and subsystems and are applicable to both hardware and software. In addition, the software-related information contained in the referenced documents is applicable to software in general. This plan extracts the appropriate software-related requirements from these directives and presents a methodology whereby they may be used in the acquisition of software. Special circumstances in any given development may require varying amounts of documentation, management attention, and/or variations in the timing of the milestones. This is, of course, at the discretion of the Program Manager (PM), but special care must be taken to ensure that the development, operational use, and maintenance of the system are not compromised.

A tactical system typically is composed of hardware subsystems such as the computer, radar, controls and displays, and other subsystems. Each of these hardware subsystems is a configuration item and is developed in accordance with military standards. Software or computer programs which are identified as Computer Program Configuration Items (CPCIs) must also be developed in accordance with the appropriate military standards and Navy regulations. It is the responsibility of the Program Manager to specify which computer programs are to be identified as CPCIs. Examples of CPCIs are as follows:

- Operational Tactical Data Systems Software
- Support Software:
  - Compilers
  - Assemblers
  - Loaders
  - Test Tools
- Crew Trainer Simulator Software
- Equipment Diagnostic Software

2. SOFTWARE LIFE-CYCLE AND MAJOR MILESTONES

The normal system life-cycle phases, defined by NAVMATINST 4130.1A, consist of five acquisition phases: Conceptual, Advanced Development/Validation, Full-Scale Development, Production/Deployment, and Operational. Three key acquisition decision points occur during the system life-cycle; they are: Program Decision (following the conceptual phase), Ratification Decision (following the advanced development phase), and Production Decision (following the full-scale development phase). These decision points are supported by the Defense Systems Acquisition Review Council (DSARC) and are designated in figure 2-1.

The first phase of the software life-cycle is the Conceptual phase which corresponds in both timing and activities to the system conceptual phase. The software documentation effort begins in this phase. During this pnase, the definition process evolves with feasibility

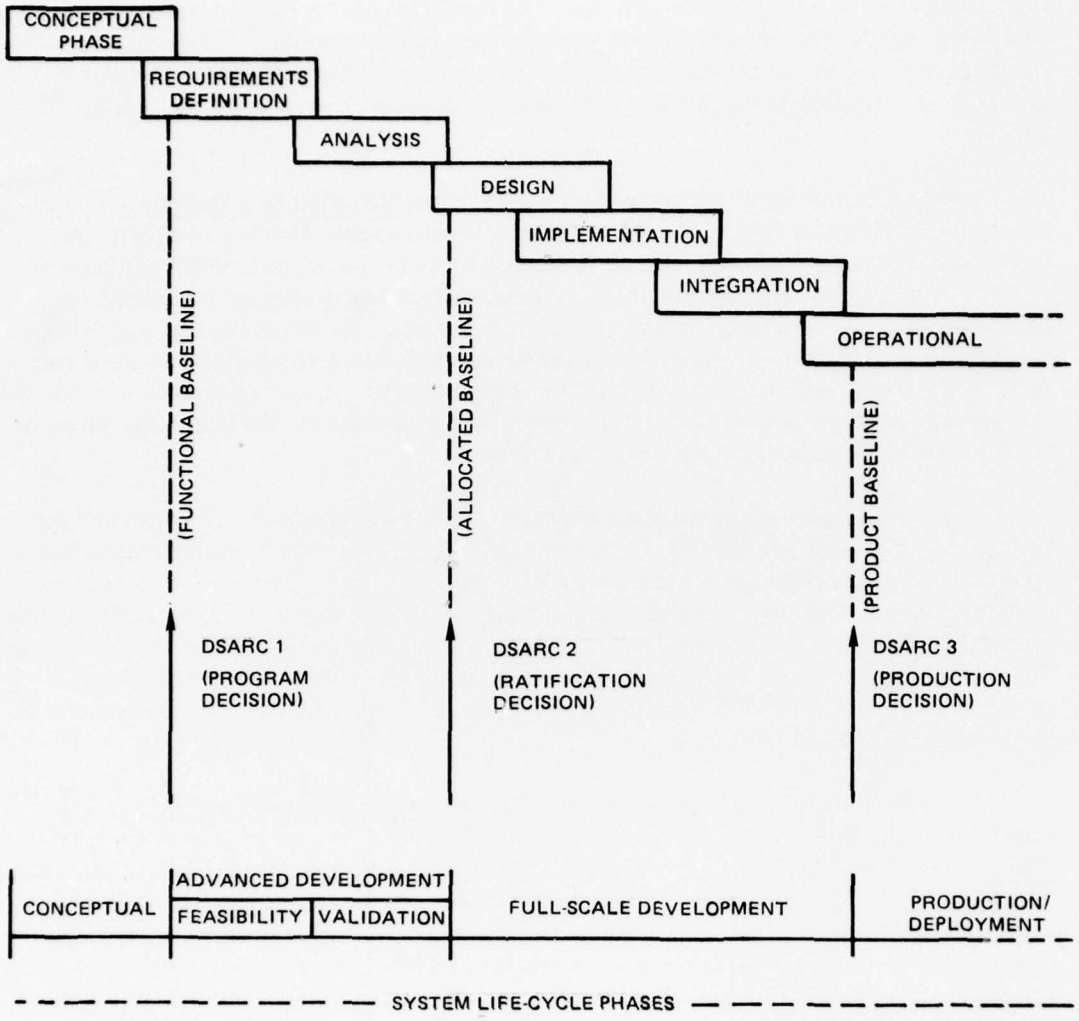


Figure 2-1. Software life-cycle phases.

assessments, tradeoff studies, and analyses. The requirements for the computer resources (and other subsystems) are allocated in terms of operational capability, major equipment elements, and functional and interface requirements. The major definitive document resulting from this phase is the initial system specification which establishes the functional baseline.

The second phase of the software life-cycle is the Requirements Definition phase. This is one of the most critical phases of software development. Unless a complete, unambiguous, testable set of requirements is developed in this phase, difficulties will arise in all subsequent phases. During this phase, systems engineering studies are conducted to define interface, performance, design, safety, human factor, quality assurance, and other requirements. Functional simulations should be developed to define inputs, outputs, and detailed equations and logic for each functional requirement. As can be seen from figure 2-1, this phase is concurrent with, and should support the objectives of, the Feasibility phase of the Advanced Development system life-cycle phase.

The third phase of the software life-cycle is the Analysis phase. Activities include all predesign activities and DSARC II preparations. This phase should result in resolution of technical and development problems identified in DSARC I and SDR reviews. This phase includes in-depth analysis of system and functional area interfaces, timing, throughput, interoperability, alternative solutions, costs, tradeoffs, risk factors, and other potential problems. The Analysis phase results in the Computer Program Requirements Review (CPRR) and culminates with the DSARC II review which will determine whether or not to proceed with the Full-Scale Development phase.

The three software life-cycle phases of Design, Implementation, and Integration occur during the Full-Scale Development and Initial Production phases. The purpose of the Design phase is to definitize, in a logical and organized manner, the functions and operations needed to satisfy all the software requirements. This includes the actual arithmetic and logic operations which must be performed. It is during this phase that test planning is accomplished to ensure a satisfactory demonstration of quality assurance requirements. In the Implementation phase, the detailed design is translated (programmed) into a higher-order or assembly language and then transformed into machine language. It is then executed as individual and/or combined elements to evaluate performance. The details of the formal test

procedures should be prepared during this performance evaluation. In-depth multilevel testing assures the system requirements are satisfied. These tests are conducted first on the subprogram level, then on a function level, and finally on the full system. The Integration phase brings together all the system components, hardware as well as software. System-level testing is conducted to assure the satisfaction of the system requirements in the actual or simulated system environment.

In the Operational phase, after system deployment, software must be maintained. Software maintenance is not maintenance in the hardware sense. It is the process of removing latent errors and responding to new or revised requirements while maintaining configuration control. Tools and expertise similar to those used during development are necessary for software maintenance during the Operational phase.

The major milestones associated with software development (fig 2-2) are concerned with formal reviews and audits, held in accordance with NAVMATINST 4130.1A and MIL-STD-1521, with the output of the technical efforts in the form of data and documentation (such as specifications, design and implementation concepts, and test plans. The software documentation effort starts in the Conceptual phase. The draft system specification is prepared and reviewed at the initial System Requirements Review (SRR) and is then updated to its preliminary form. A second SRR may be held following contract award to ensure that the contractor fully understands the requirements as defined in the system specification.

In the Requirements Definition phase, the final system specification is issued. Also, the draft Program Performance Specification (PPS) development specification and the draft Interface Design Specification (IDS) are prepared and reviewed at the System Design Review (SDR). As a result of this review and continuing analyses, these documents are revised into their preliminary forms during the Analysis phase. Since MIL-STD-1521 requires finalizing and approval of these development specifications before the Preliminary Design Review (PDR), it is recommended that the procuring agency hold a Computer Program Configuration Item (CPCI) Requirements Review (CPRR) at the end of the Analysis phase, even though such review is not required by MIL-STD-1521. This review should ensure that all JTIDS activities have an opportunity to provide inputs and review the requirements prior to JPO approval.

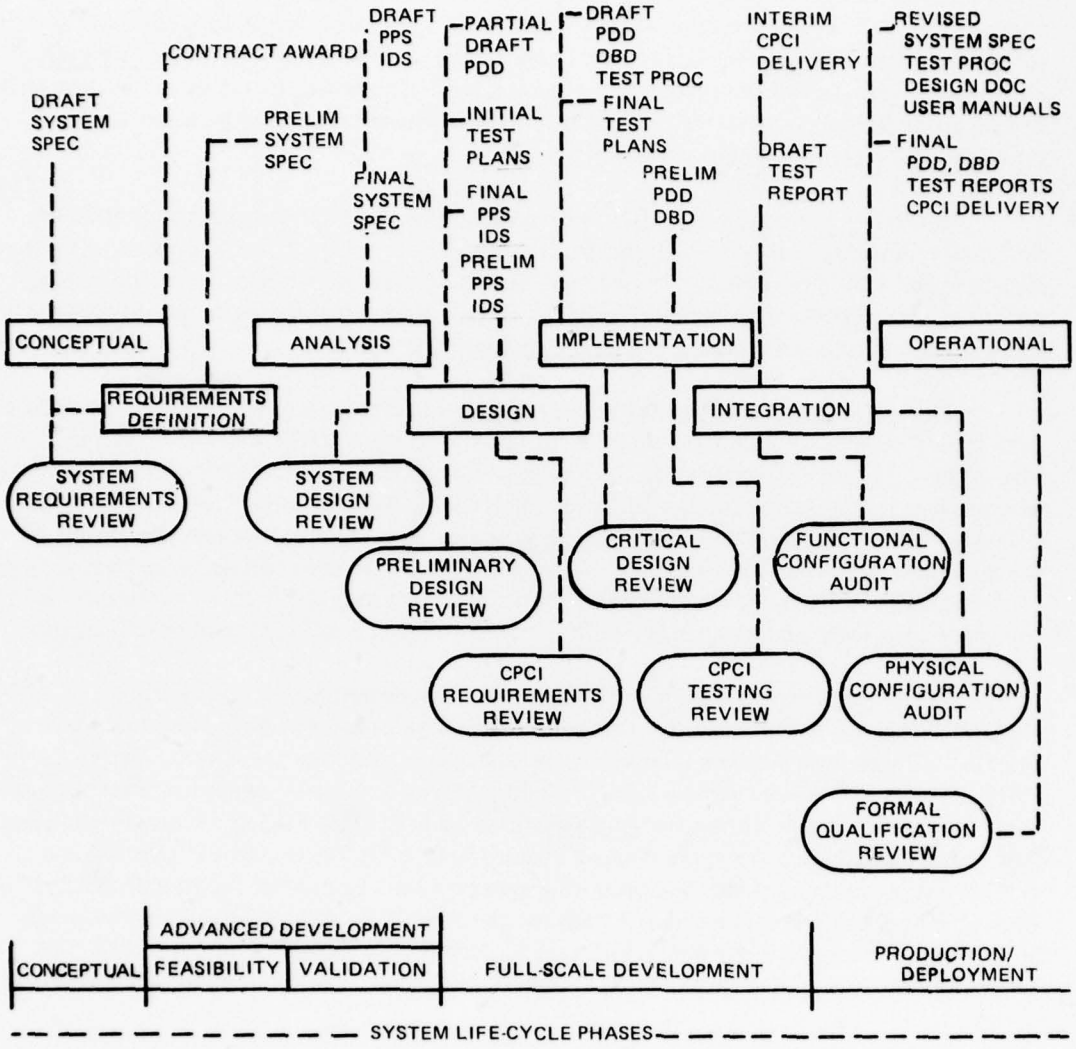


Figure 2-2. Software life-cycle phases and major milestones.

The final Program Performance and Interface Design Specifications (PPS and (IDS) are issued in the Design phase. A partial draft Program Description Document (PDD) and preliminary test plans are prepared for review at the Preliminary Design Review (PDR). The design phase ends with the issuance of the final test plans, draft test procedures, Program Design Specification (PDS), and the draft Program Description Document (PDD). These documents are all reviewed at the Critical Design Review (CDR).

In the Implementation phase, the test procedures are finalized and initial CPCI delivery is accomplished. An interim CPCI delivery is made and the updated PDD is issued. MIL-STD-1521 does not require a formal review during the testing phase; however, it is recommended that the procuring agency hold a CPCI Testing Review (CPTR) prior to the start of formal testing. This review would allow all JTIDS activities and associated contractors to review the testing activity before the JPO approves the start of formal testing. The Implementation phase is concluded with the issuance of a second interim CPCI and draft test reports to be reviewed at the Functional Configuration Audit (FCA).

During the Integration phase, the final copies of the specifications, test reports, and CPCI are delivered. Revised copies of the system and program and interface specifications are issued incorporating JPO-approved changes to provide current documentation for transition to the Operational phase. The Physical Configuration Audit (PCA) is held following these final and revised issuances.

It should be noted also that the documents shown in figure 2-2 constitute just a portion of those required by SECNAVINST 3560.1, Navy Tactical Digital Systems Documentation Standards. Table 2-1 shows the full list of required documents. It should be noted that SECNAVINST 3560/1 calls for a Test Plan, Test Specification, Test Procedures, and Test Report for each of four types of testing; ie, System Integration; Function; Subprogram/Module; and System/Program Performance/Acceptance testing. All SECNAVINST 3560.1 document requirements are shown on the time-line drawings of section 4.

TABLE 2-1. DOCUMENT ACTION REQUIREMENTS.

GROUP/DOCUMENT TITLE	ACTION*		
	Authorize	Approve	Accept
System Development			
Tactical Operational Requirement	X	X	
Software System Specification			
System Operational Requirement	X	X	
System Operational Design		X	
Function Operational Specification	X		
Interface Design Specification		X	
Program Specification			
Program Performance Specification		X	
Function Operational Design		X	
Program Design Specification			X
Program Description			
Program Description Document			X
Data Base Design			X
Program Package			X
Test Plans/Specifications			
Test Plans		X	
Test Specifications		X	
Test Procedures/Reports			
Test Procedures			X
Test Reports			X
Program Manuals			
Operator's Manual		X	
Program Design Manual			X
User Manuals			
Command and Staff Manual	X		
System Operator's Manual	X	X	

*Authorize: To confer authority upon, empower, warrant
Approve: To confirm, sanction, satisfy
Accept: To confer authority upon, empower, warrant

3. SOFTWARE PLANNING WITHIN A SYSTEM ACQUISITION

The conceptual phase of a system acquisition consists of six subphases which are shown in figure 3-1 and discussed below.

1. Initial Activity: The Director, Research, Development, Test and Evaluation (DRDT&E), after receiving an Operational Requirement (OR), channels it to the Acquisition Review Committee (ARC) or to the Ship Acquisition and Review Panel (SAIP). Both are subpanels of the CNO Executive Board (CEB). One or more of these will evaluate the initial activity and determine the level of OR validation required.

2. Validation: All ORs are concurred in by cognizant sponsors and Director, Navy Program Planning, and promulgated by DRDT&E. ORs which will lead to major weapon system acquisitions, or require costly R&D programs or early conceptual effort, are submitted to the CEB/ARC/SAIP for concurrence prior to promulgation to Chief Naval Material (CNM). If the requirement is approved, the OR is promulgated along with a request for NAVMAT to generate a Development Proposal (DP).

3. Development Proposal: The DP formally responds to the OR. The DP is submitted in accordance with the schedule and special instructions (eg, reliability, maintainability, and manpower and software requirements) contained in the promulgating letter forwarding the OR. NAVMAT consults with the OPNAV OR sponsor, DT&E activities, and appropriate test agencies (for OT&E) while preparing the initial DP draft and conducting the feasibility and other studies necessary to evaluate alternatives, cost comparisons, risks, test and evaluation, and other factors such as logistics, training, and support. Development plans are included in the DP.

4. Navy Decision Coordinating Paper (NDCP): If the results of the feasibility studies are favorable, the DP proposes a draft NDCP be developed. This document defines program issues, the considerations which support the operational need, program objectives, program plans, performance parameters, areas of risk, development alternatives, levels of logistic support, and relationship to logistic capabilities. Draft NDCPs for major acquisitions are normally presented for CNO approval at a CEB/ARC/SAIP meeting. If required to further define the

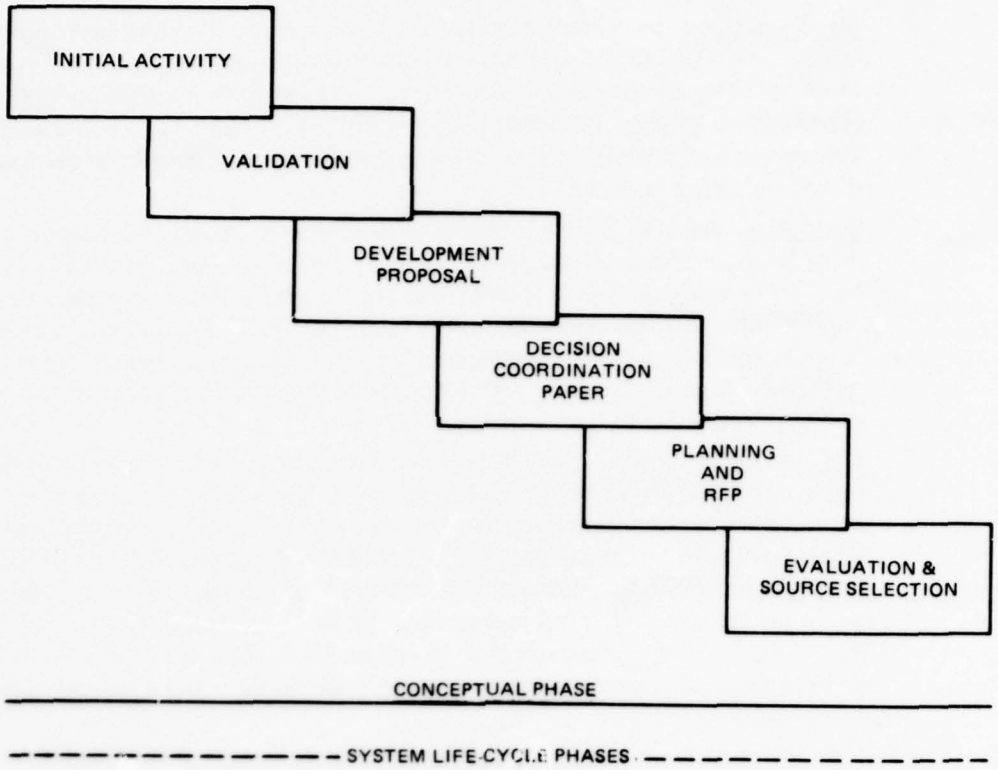


Figure 3-1. Conceptual phase activities.

program or alternatives, additional CEBs, ARCs or SAIPs will be used to develop the CNO decision (preferred alternative). A final approved NDCP is produced which authorizes the commencement of the Advanced Development phase or, for major acquisitions, the extension of the Conceptual phase.

In the latter case, a draft DCP or, in some cases, a draft Program Memorandum (PM) is submitted to the CEB/ARC/SAIP for decision and approval necessary before submitting the DCP or PM in final form to SECDEF and/or the DSARC I process. Advance Procurement Planning will result in Advanced Procurement Plans (APPs), prepared for system procurements meeting certain dollar thresholds, being submitted to the same agenda. Assuming a favorable response, SECDEF or the DSARC process authorizes the acquisition to Advanced Development.

5. Planning: The Program Office (PO) plans the acquisition, prepares a number of planning documents including the draft RFP, and prepares the draft system specification. During this phase, the system requirements are firmly established and reviewed at the System Requirements Review (SRR). The Program Management Plan (PMP), which delineates the activities throughout the system development, is also prepared. The computer resources (including software, documentation, equipment, etc) content of the PMP is prepared by the implementing command in conjunction with the supporting and using commands. This includes complete planning for the acquisition management of the computer resources. Finally, the Computer Resources Integrated Support Plan (CRISP) is developed, which identifies organizational relationships and responsibilities for the management and technical support of the total software system.

   During this phase, the RFP is finalized and issued. Prior to issuance of the RFP, a thorough review of the RFP Statement of Work and Contract Data Requirements List (CDRL) should be conducted to ensure that the data items and management control, as discussed in section 4, will be attainable and definitized in the Statement of Work (SOW).

6. Evaluation and Source Selection: Contractors respond to the RFP. After the due date, contractor responses to the RFP are evaluated and a decision is made during source selection.

The preceding description of the activities and events of the Conceptual phase is a very general summary primarily of information presented in OPNAVINST 5000.42A, SECNAVINST 5000.1, and NAVMATINST 5200.11B. For additional detail regarding acquisition processing, the reader is referred to these Navy instructions and to others listed in the bibliography (appendix A). Figure 3-2 is based on a diagram in OPNAVINST 5000.42A and presents a general flow of information presented in that document.

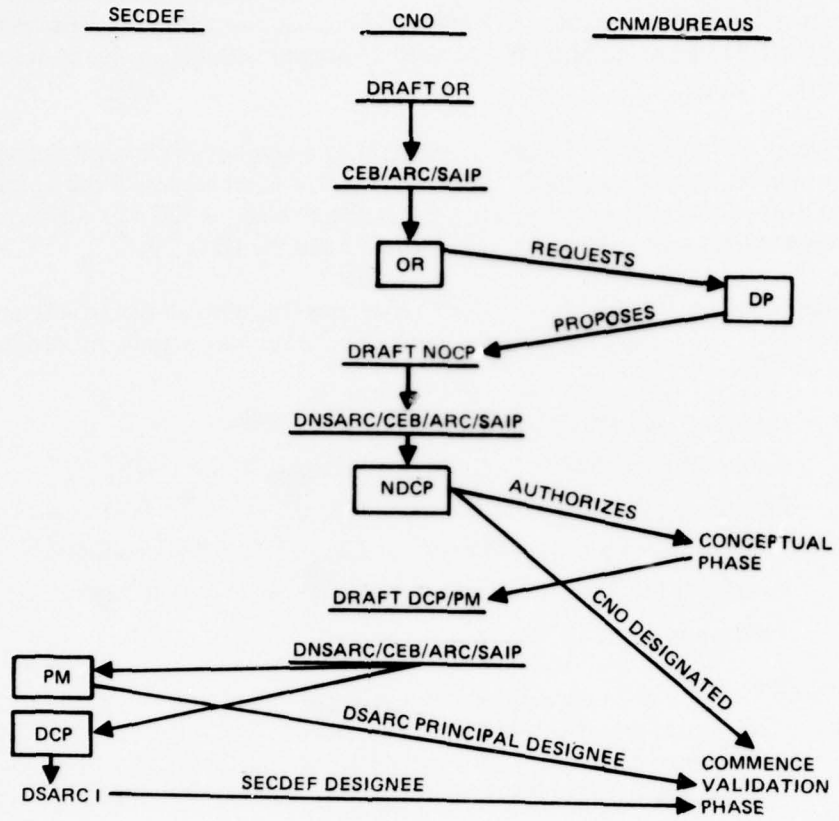


Figure 3-2. Documentation and review procedure.

4. MANAGING THE SOFTWARE DEVELOPMENT

A successful JTIDS software development is best accomplished if the JPO/JTIDS has an in-depth view of the software development and maintains a strong management role. In a previous section (section 2), the normal reviews and audits, as defined in NAVMATINST 4130.1A and Military Standard 1521, were discussed. These are shown in figure 4-1.

Figures 4-2 through 4-12 identify and refer to a number of required documents, many of which require JPO approval. These documents, combined with the normal reviews and audits, force an orderly development of contractor software and make the managerial and technical activities of contractors visible to JPO and the Navy.

Figures 4-3, -5, -7, -9, -11, -12 provide a detailed breakdown of the software development process. The required managerial and technical support actions are divided into the following six intervals.

1. Contract Award to System Design Review (SDR)
2. System Design Review to Preliminary Design Review (PDR)
3. Preliminary Design Review to Critical Design Review (CDR)
4. Critical Design Review to Computer Program Test Review (CPTR)
5. Computer Program Test Review to Formal Qualification Review (FQR)
6. Transition

The applicable Navy instructions and military standards, as well as the required managerial and technical activities, are listed in the above-mentioned figures for each step within the above-defined intervals. Additional detail and explanation of terms may be found in the military standards or Navy instructions listed in the bibliography (appendix A).

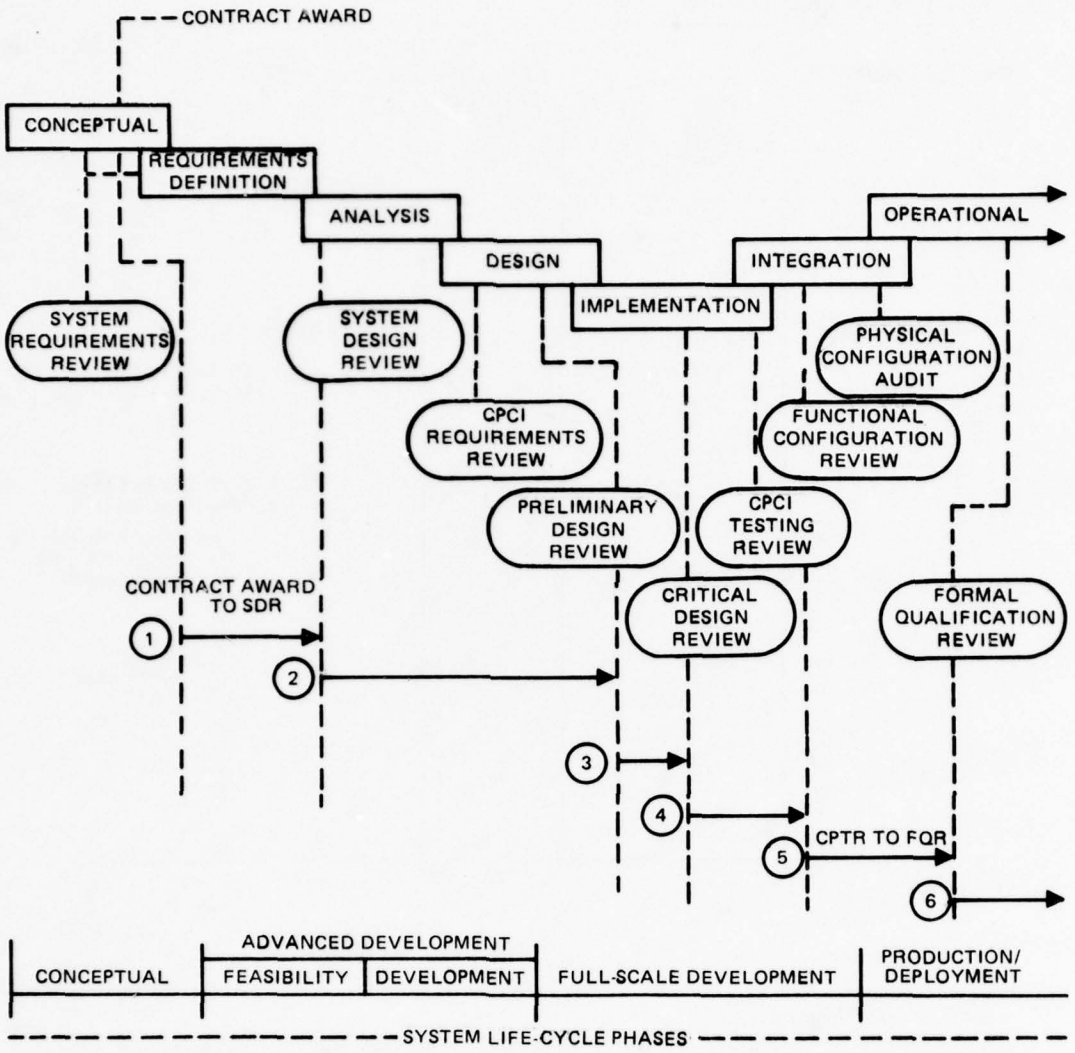


Figure 4-1. Software life-cycle phases and major milestones.

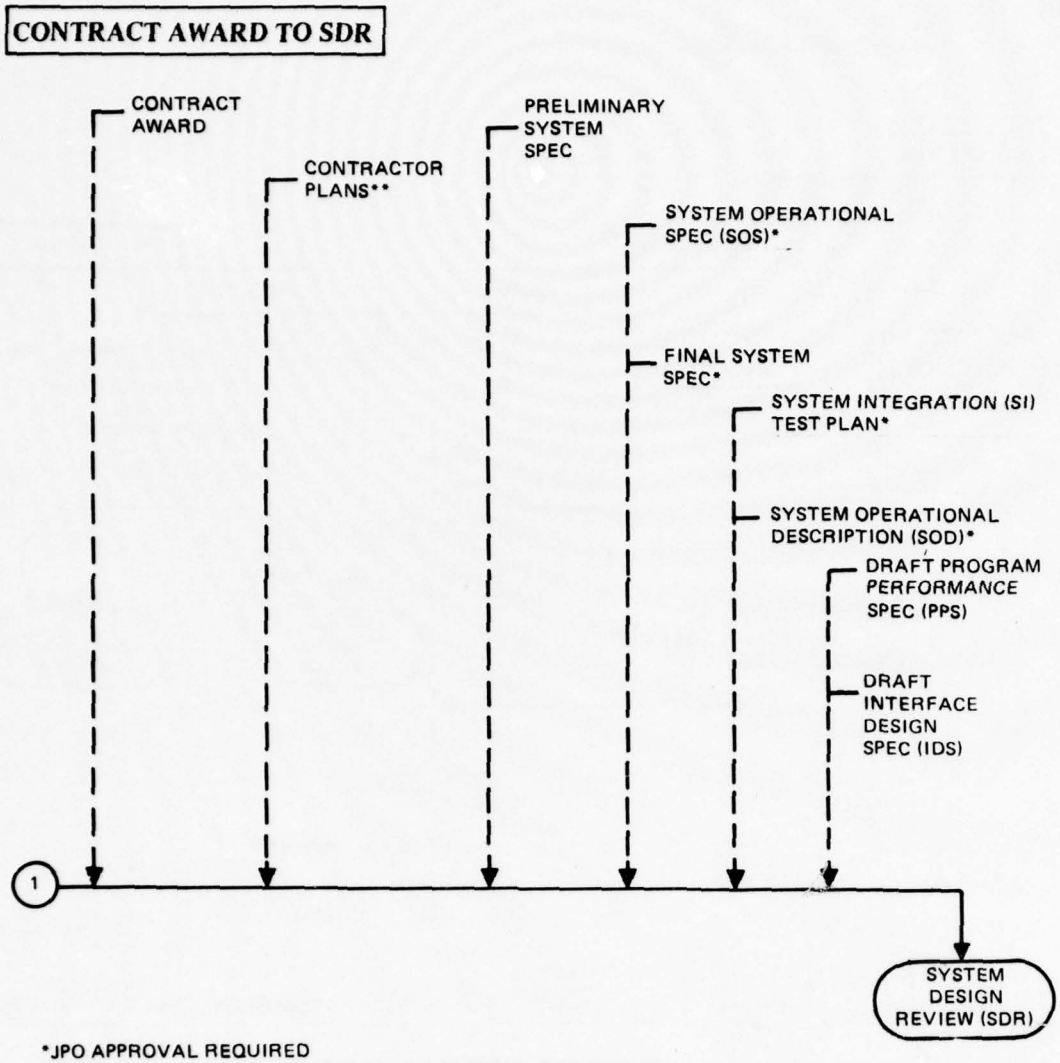


Figure 4-2. Documentation requirements (contract award to SDR).

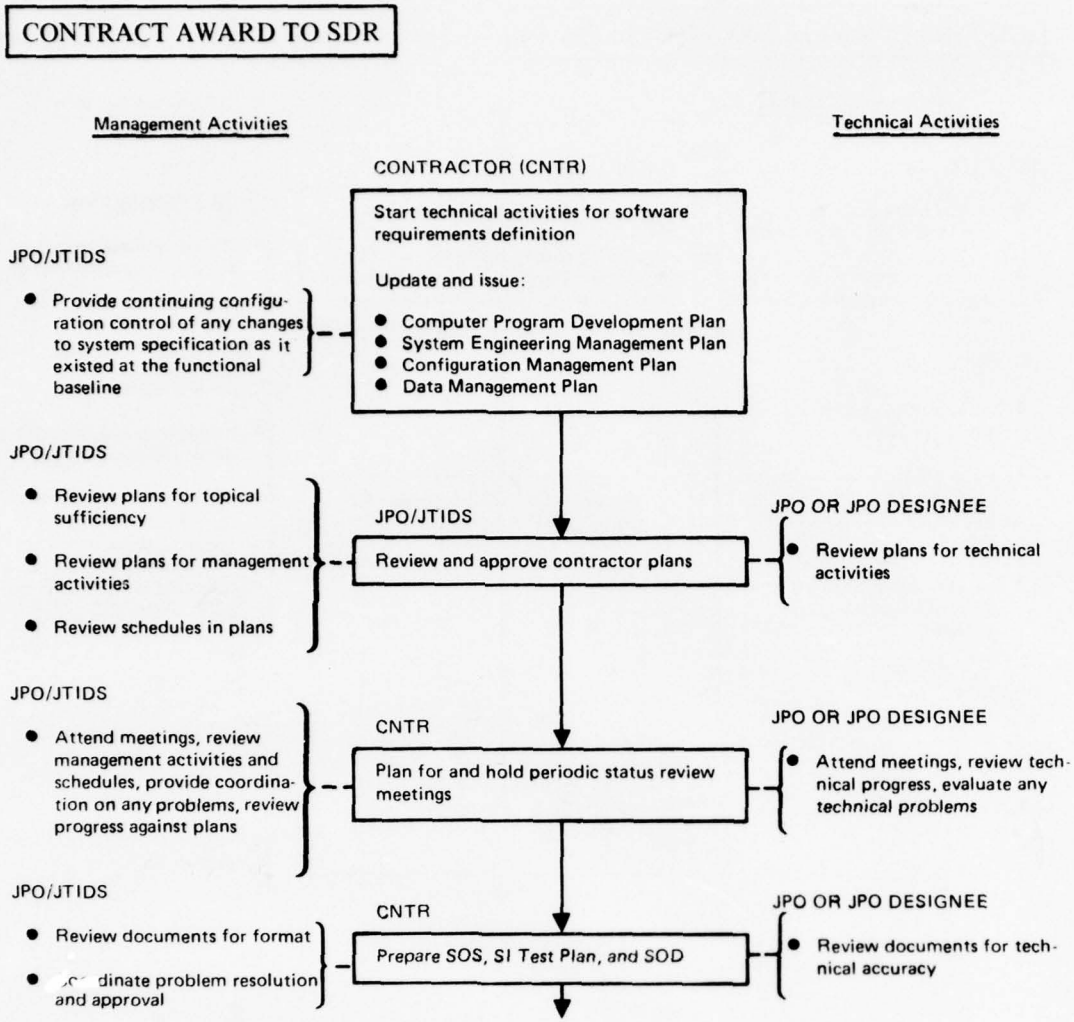


Figure 4-3. Detailed software development activities (contract award to SDR).

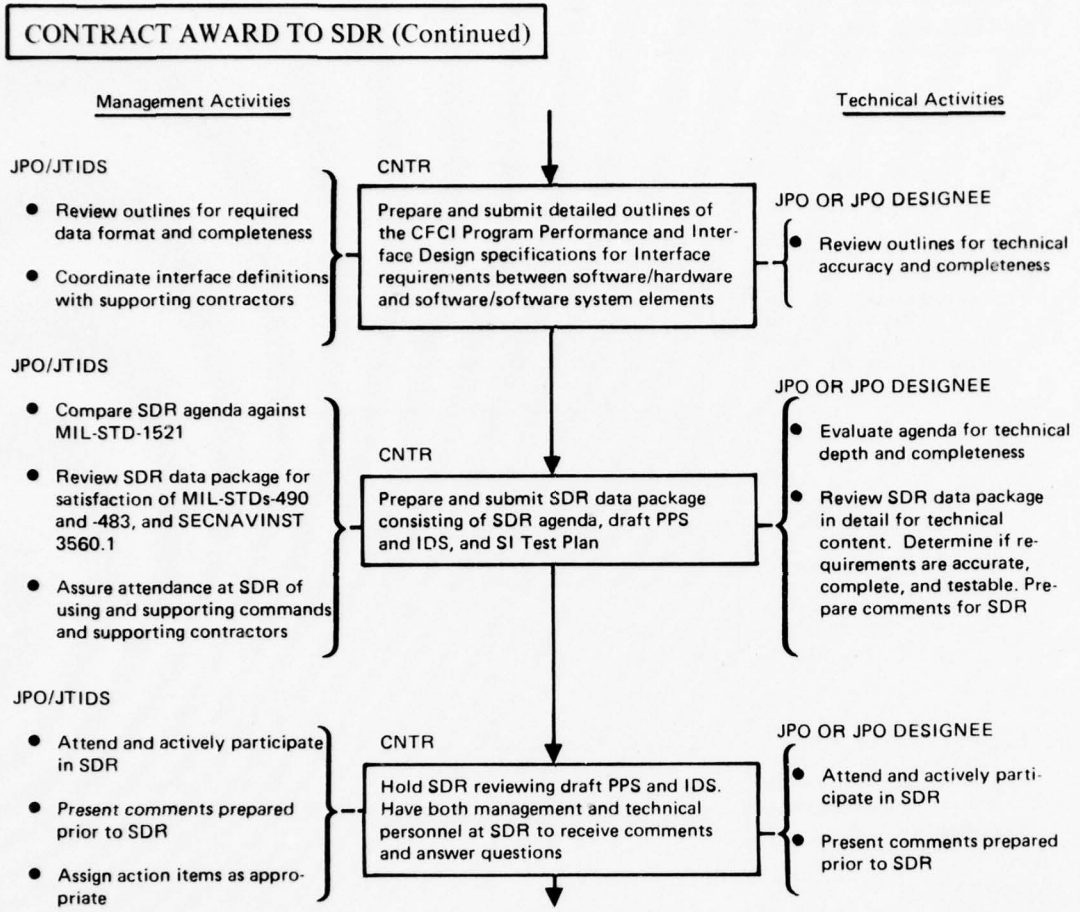


Figure 4-3. Continued.

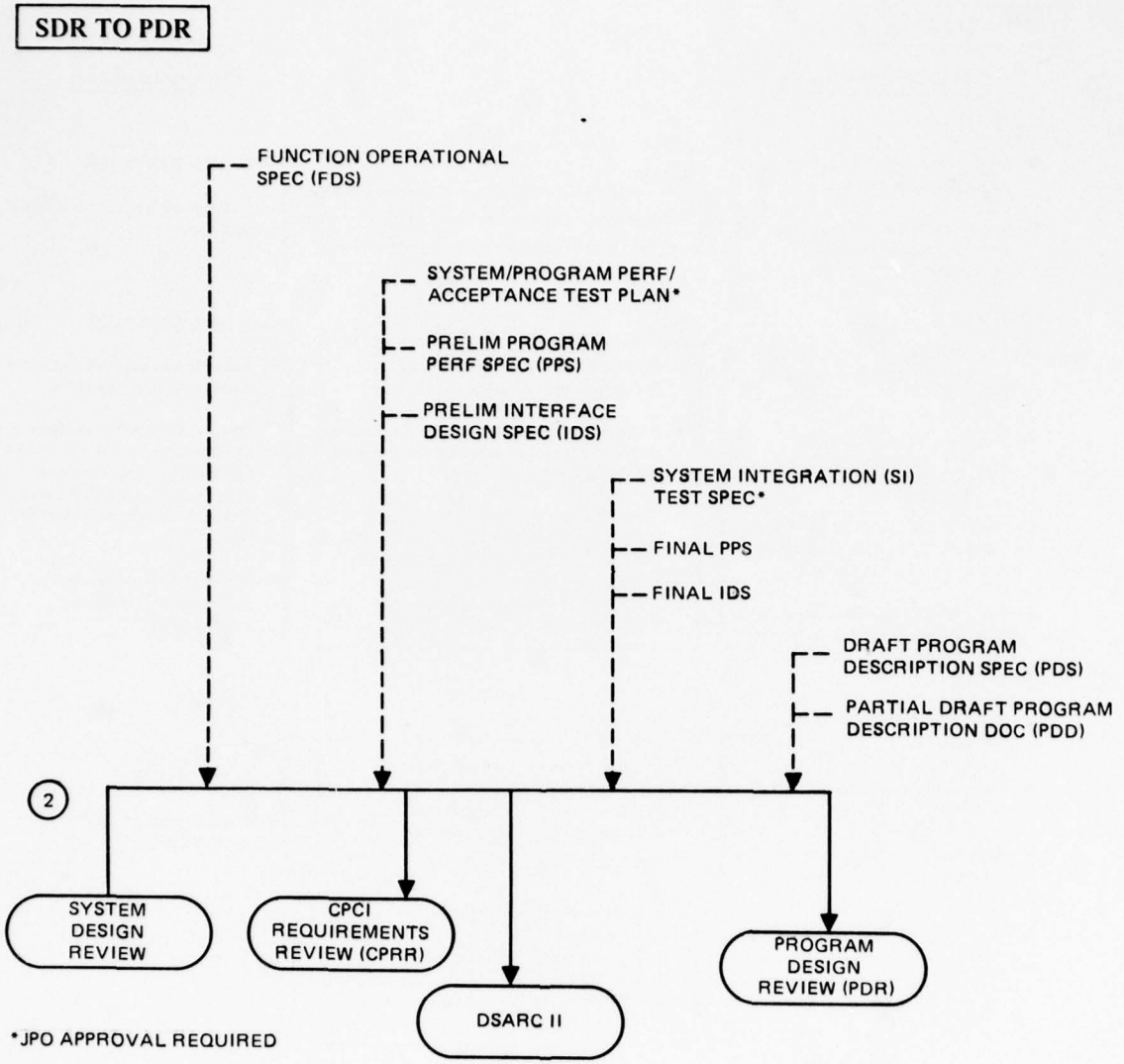


Figure 4-4. Documentation requirements (SDR to PDR).

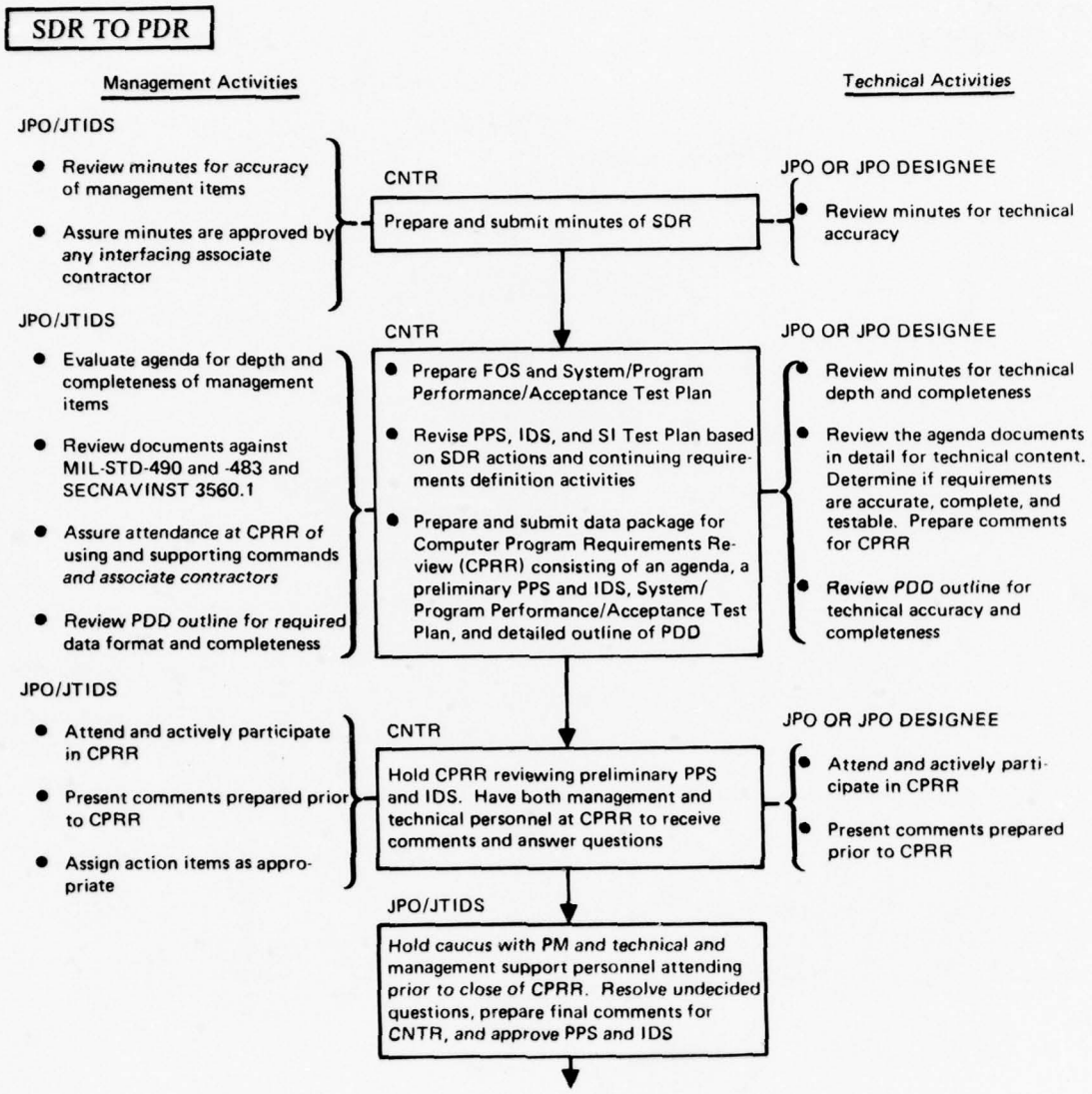
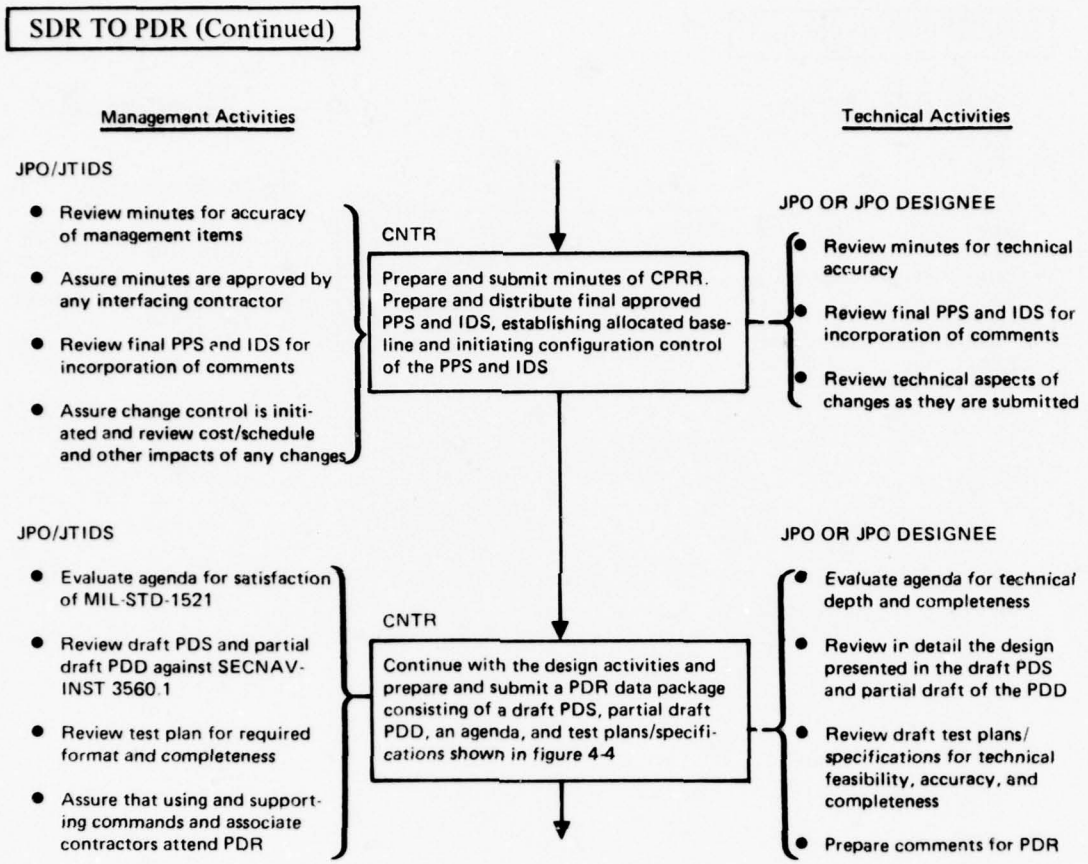


Figure 4-5. Detailed software development activities (SDR to PDR).



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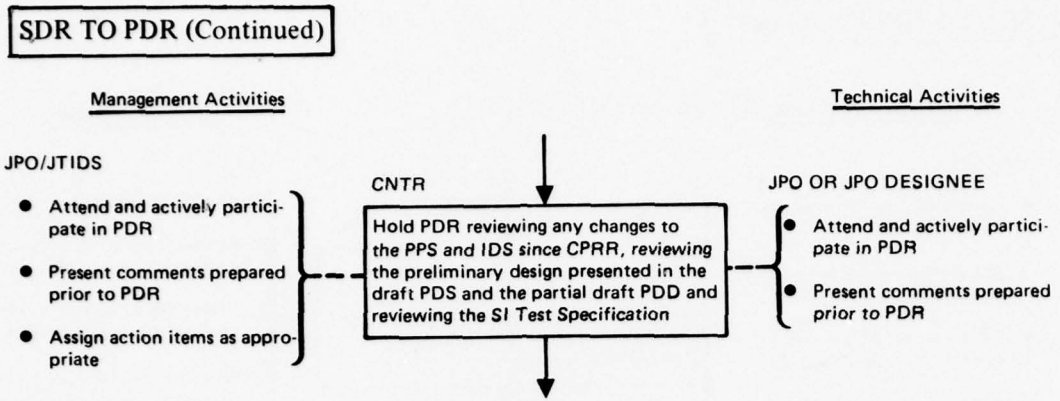

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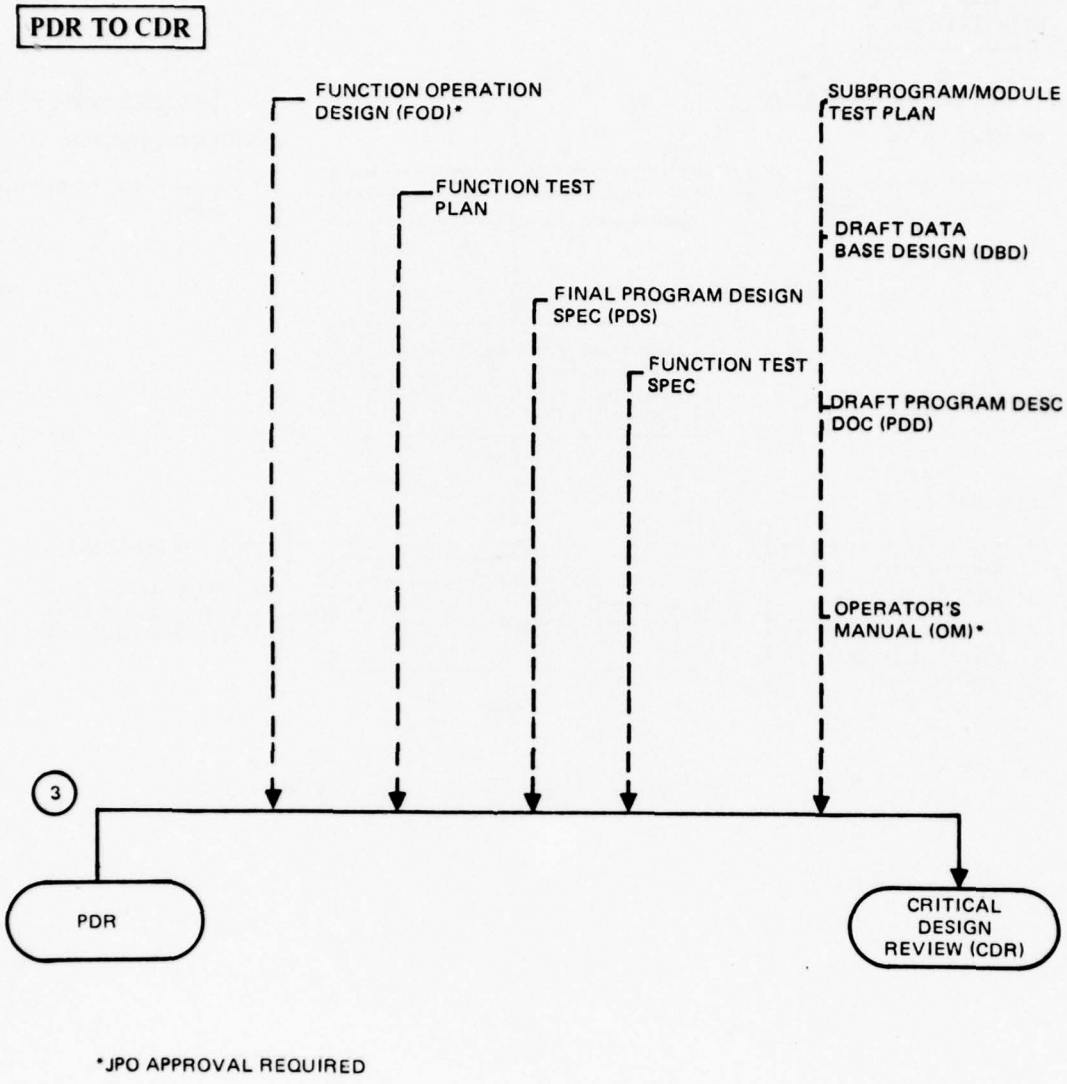

Figure 4-6. Documentation requirements (PDR to CDR).

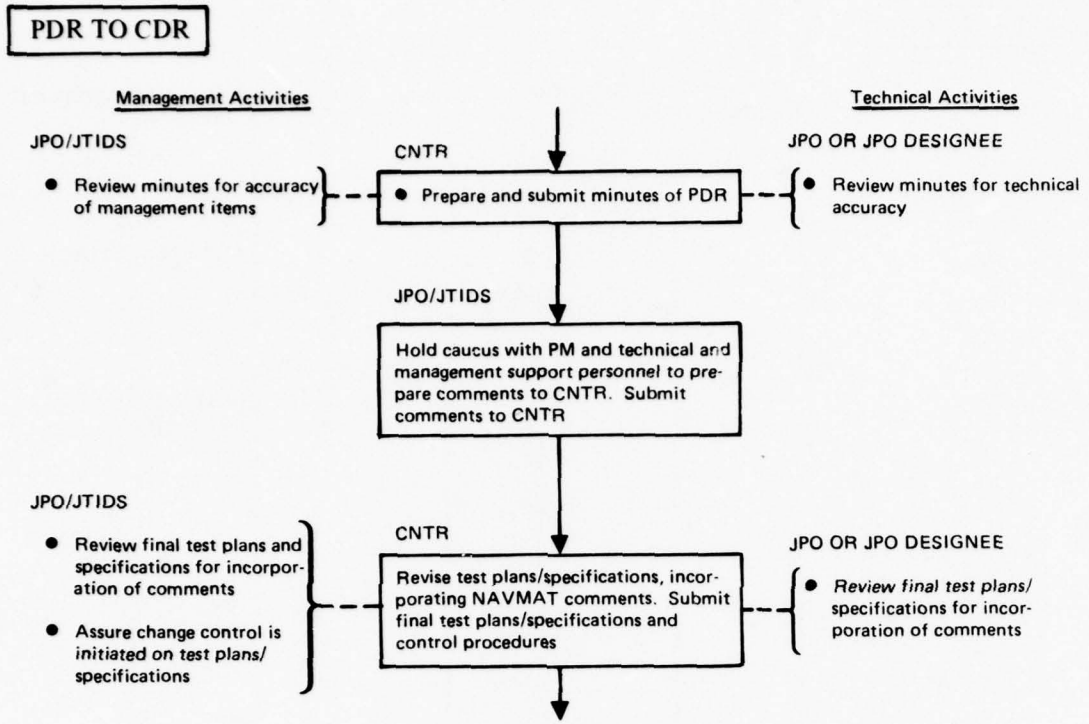

Figure 4-7. Detailed software development activities (PDR to CDR).

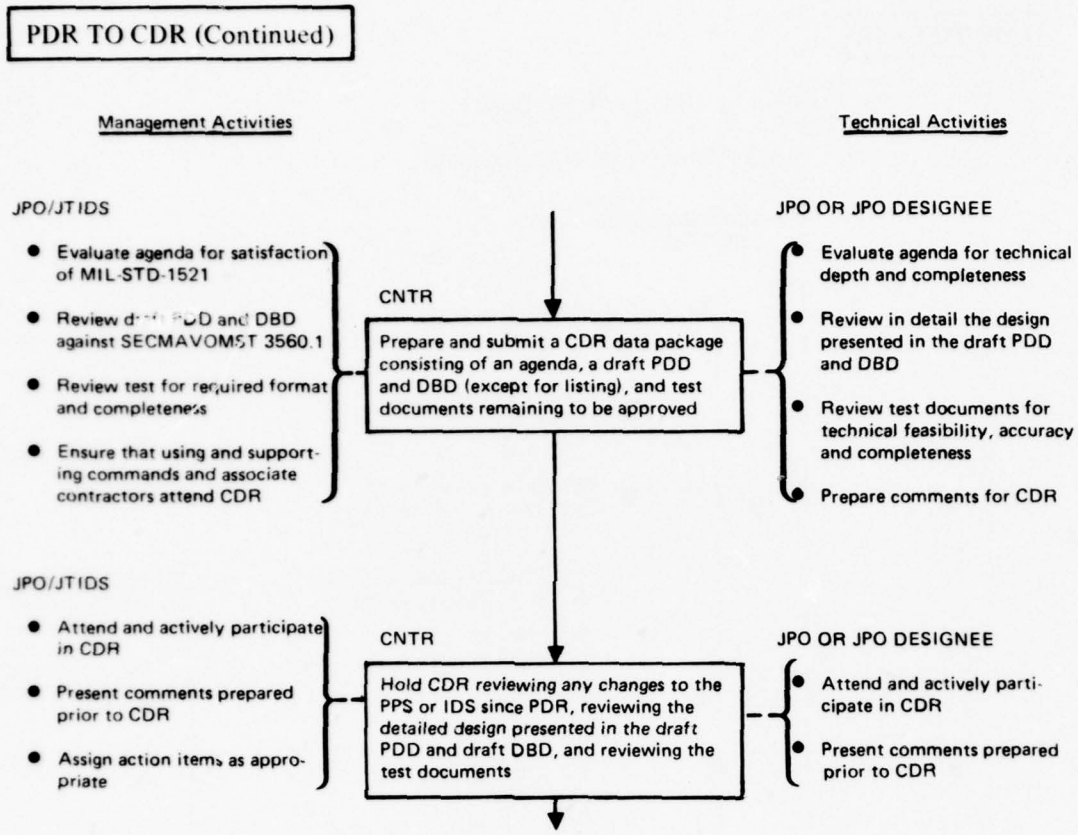

Figure 4-7. Continued.

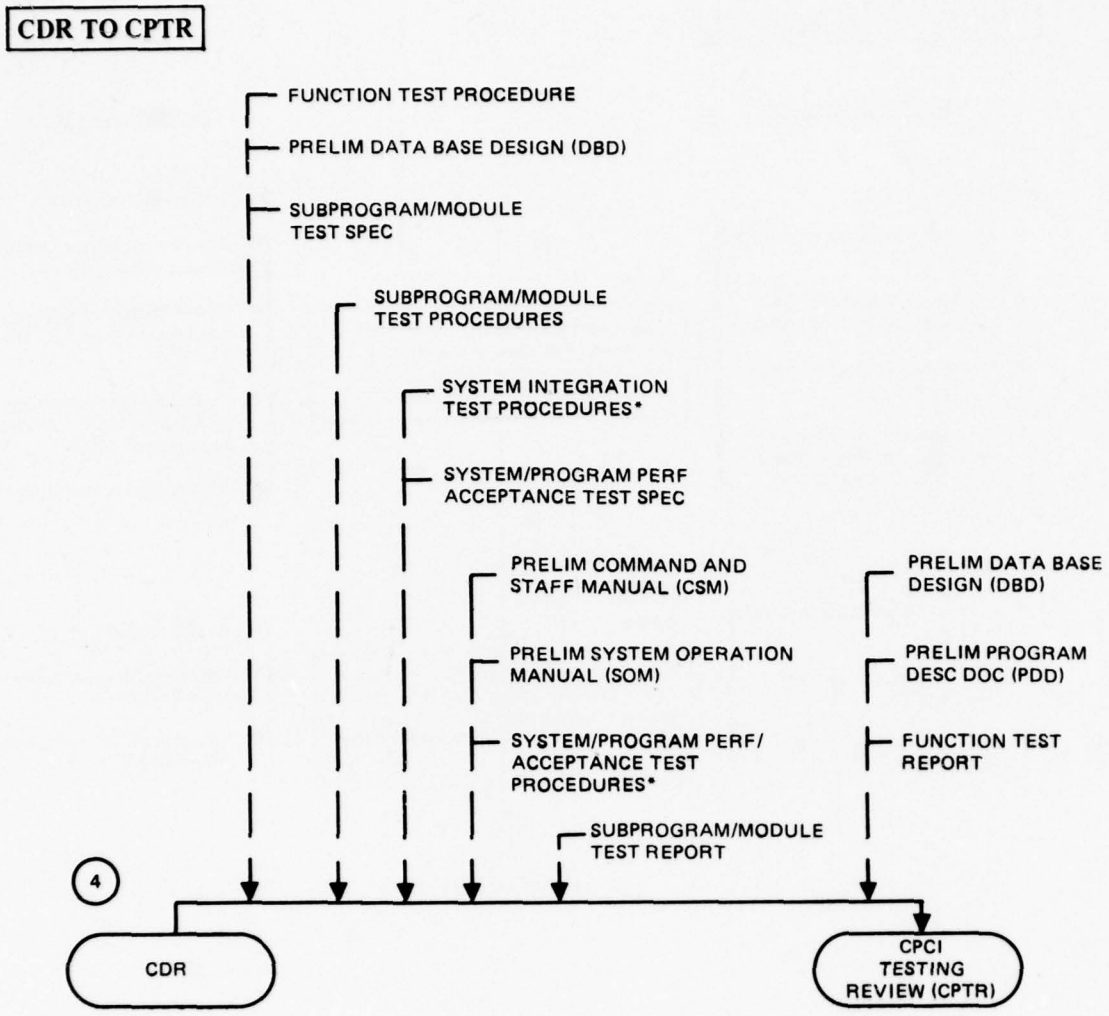

Figure 4-8. Documentation requirements (CDR to CPTR).

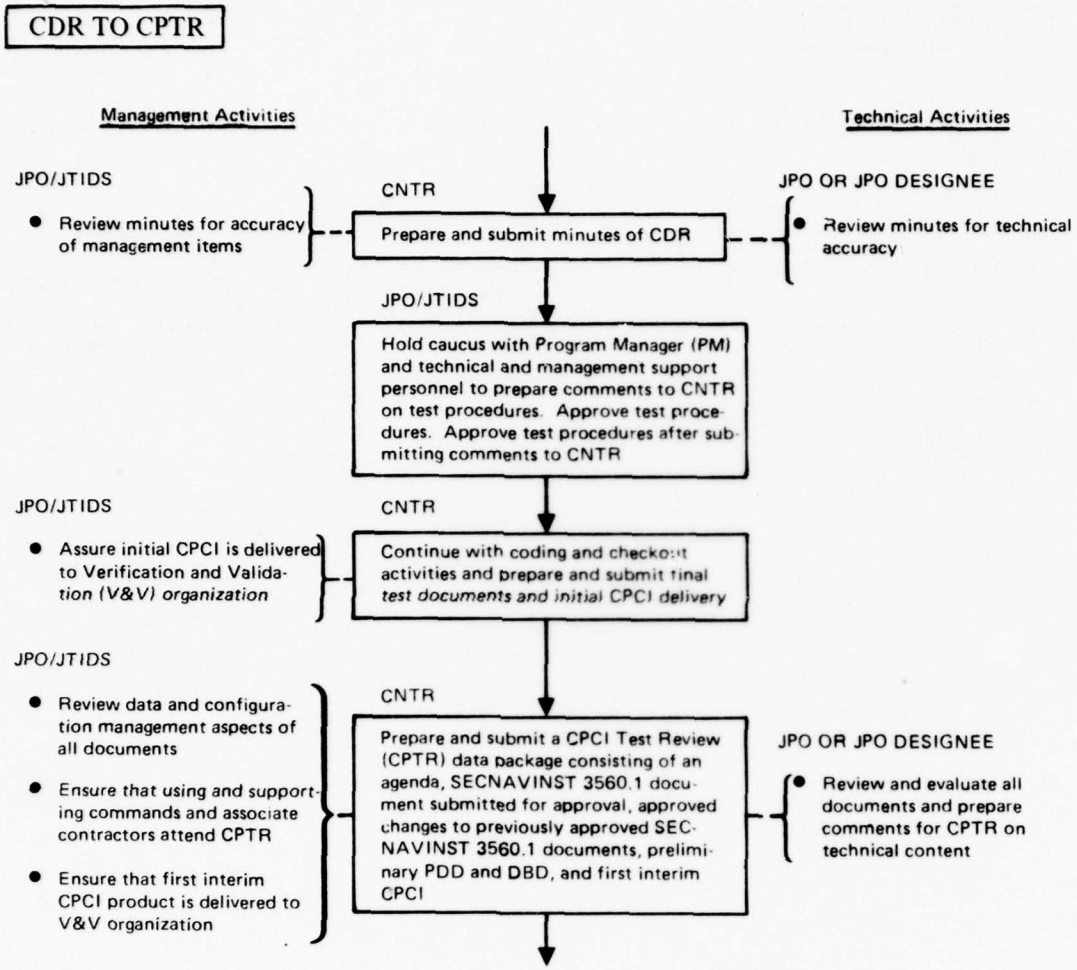

Figure 4-9. Detailed software development activities (CDR to CPTR).

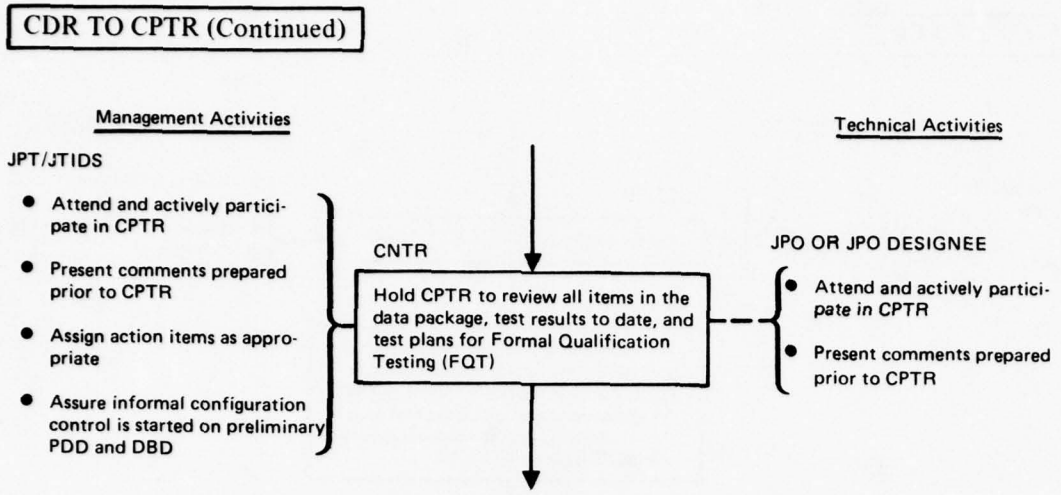

Figure 4-9. Continued.

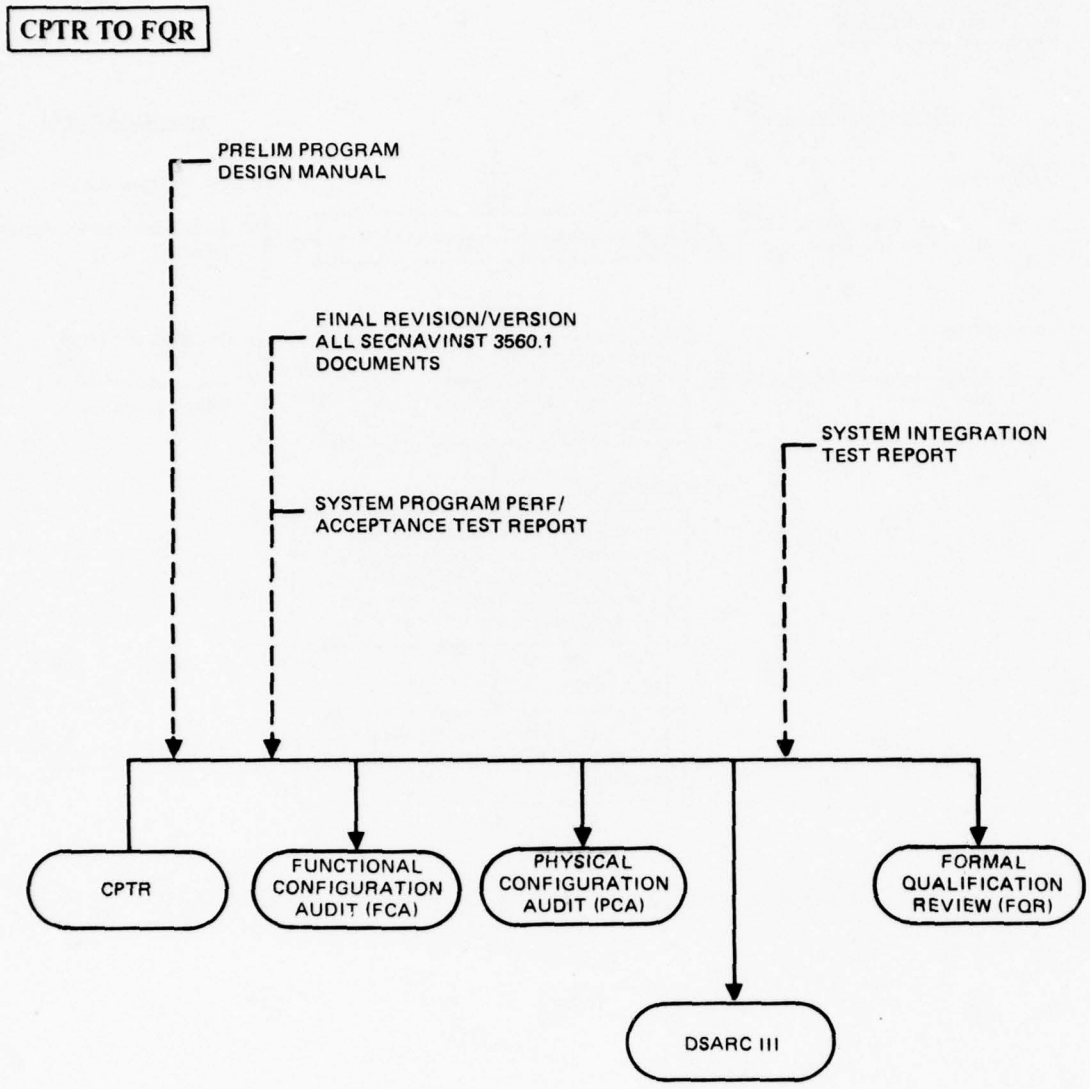

Figure 4-10. Documentation requirements (CPTR to FQR).

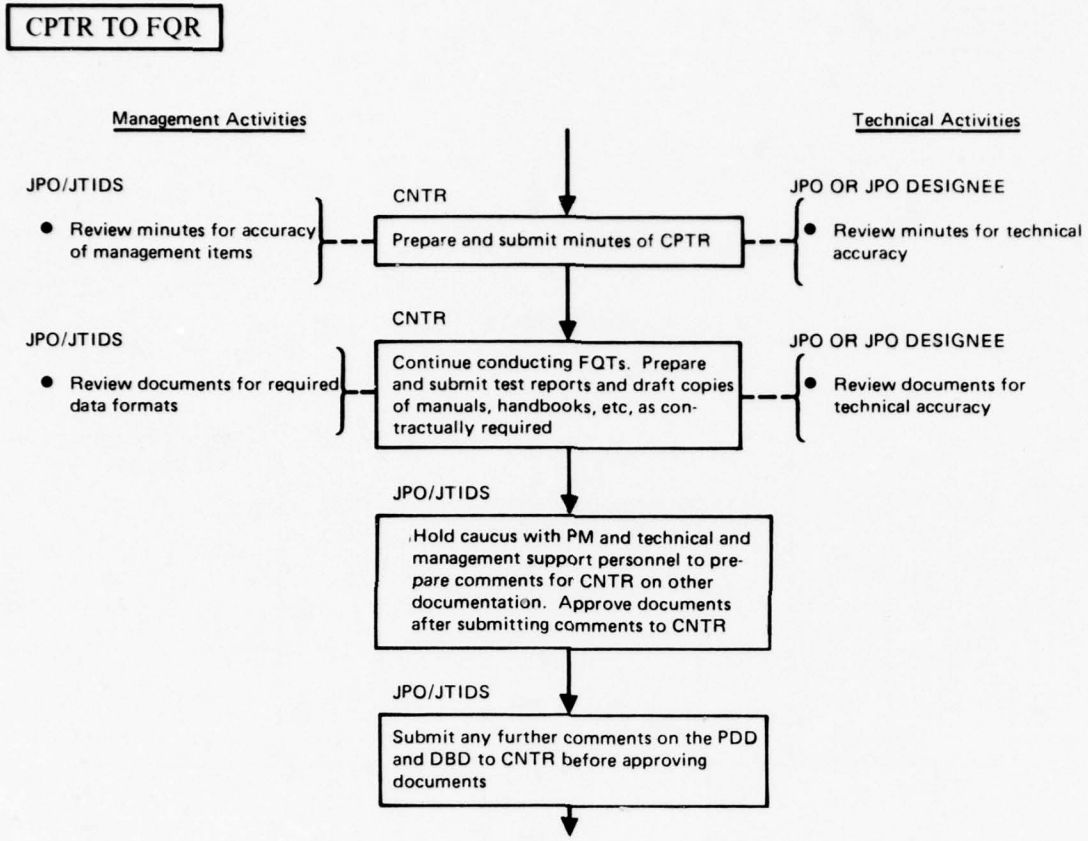

Figure 4-11. Detailed software development activities (CPTR to FQR)

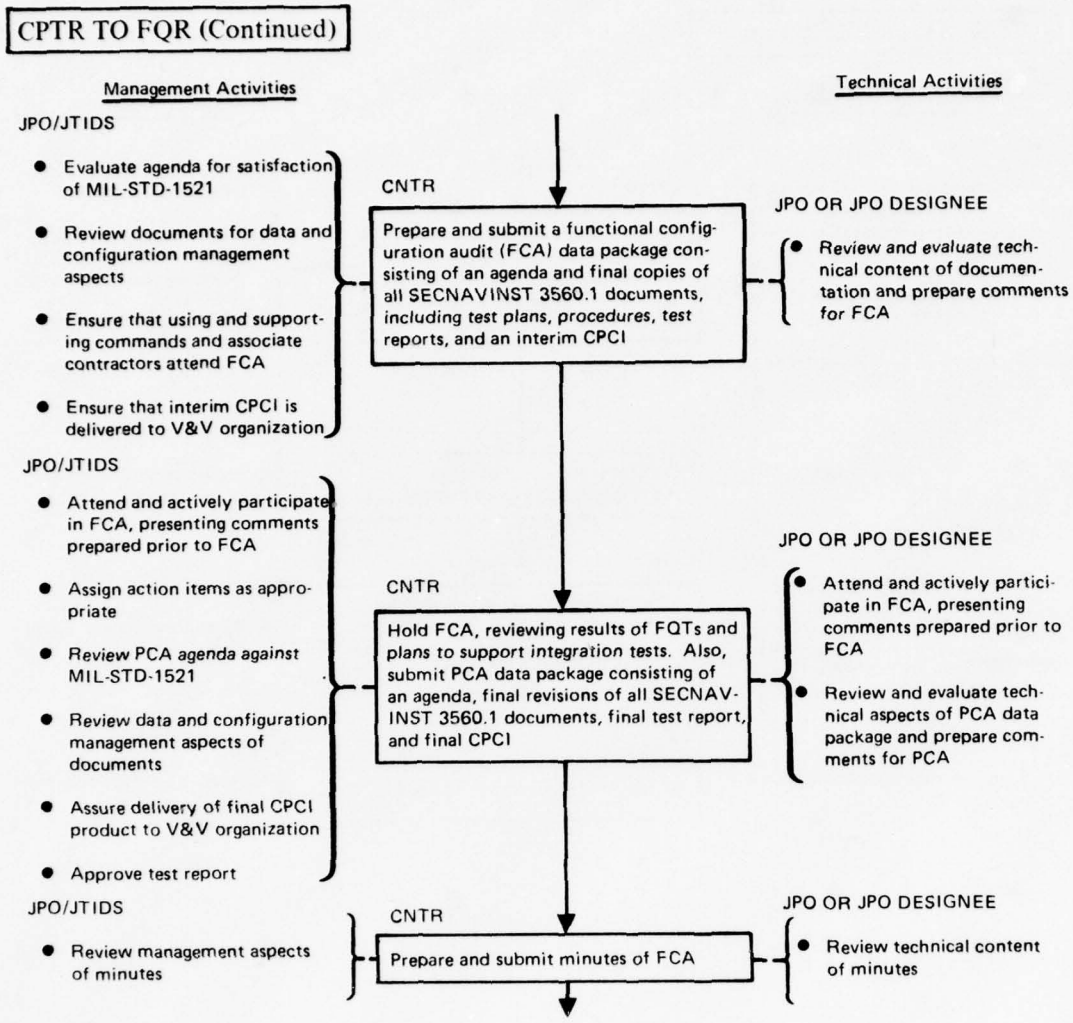

Figure 4-11. Continued.

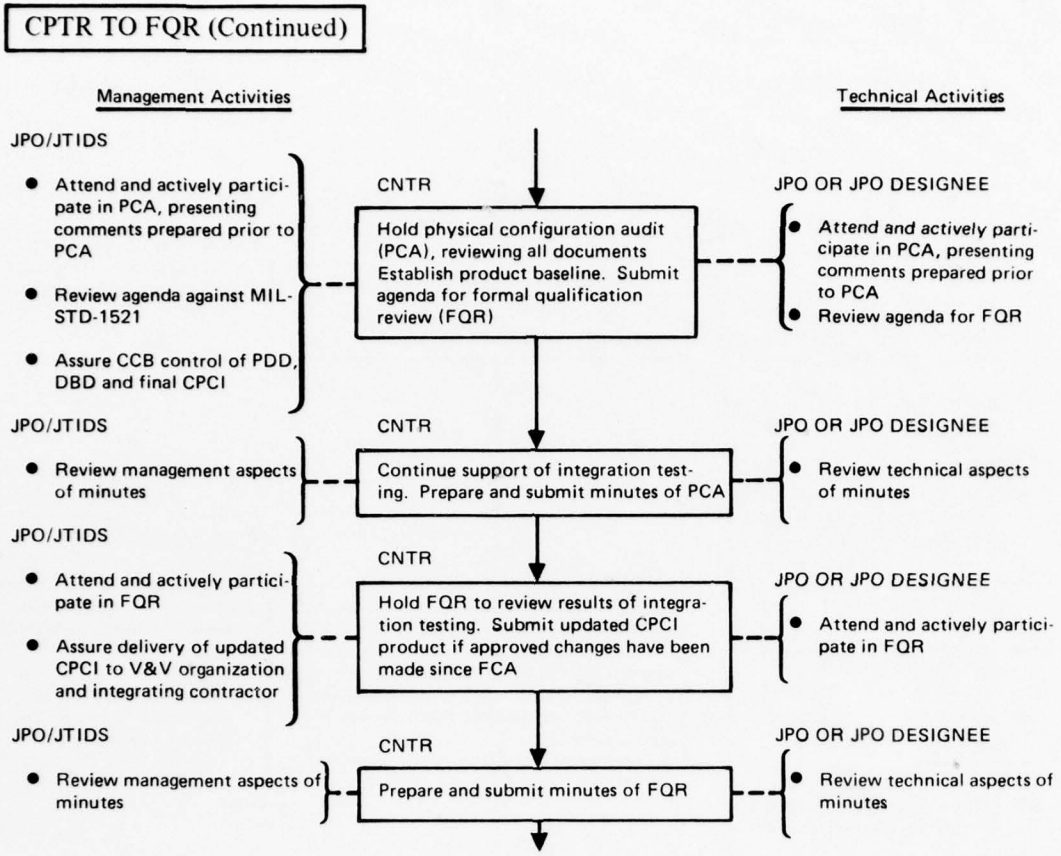

Figure 4-11. Continued.

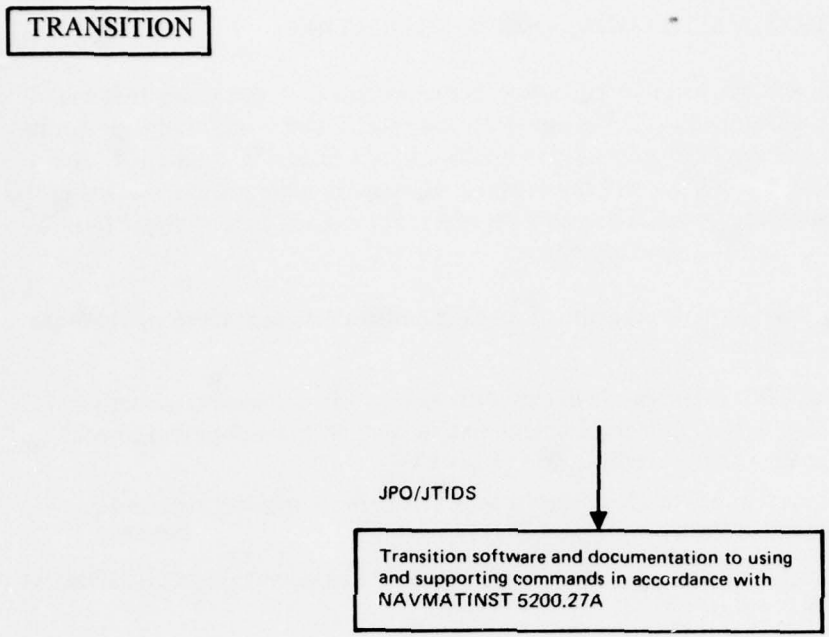

Figure 4-12. Detailed software development activities (transition).

5. VERIFICATION, VALIDATION, AND CERTIFICATION

Verification, validation, and certification is the process of determining that the computer program is developed in accordance with the specifications and that it performs satisfactorily, in the mission environment, the functions for which it was designed. It is intended to aid the Program Office and the Program Manager in planning and managing the implementation of software verification concepts and requirements as they relate to military systems software acquisition management.

Verification, validation, and certification each address different levels of software analytical evaluation and testing:

- Verification is CPCI oriented. It begins with system and software engineering activities, which lead to CPCI definitions and to the CPCI Development Specification, and ends with the qualification of the CPCI.
- Validation is system oriented. It begins with the System Specification and concludes at the end of System Integration (SI) Testing.
- Certification is a user-oriented, system-level activity and occurs during Operational Test and Evaluation (OT&E).

Figure 5-1 illustrates verification, validation, and certification within the context of this report by showing (1) the five phases of system acquisition plotted against an arbitrary time line, (2) the major software-related products, and (3) arrows relating the products to the baselines against which they are evaluated or tested. Each arrow is labeled to indicate the specific review test or audit during which the product is evaluated. In addition, the arrows are labeled to indicate which of the three processes is involved (verification, validation, or certification) . Subsequent paragraphs define the terms verification, validation, and certification within this context.

Differences between the levels of verification, validation, and certification are shown graphically in a different manner in figure 5-2, which shows the successive development of verification and validation (V&V) on the left (downward pointing) leg of the diagram. The right (upward pointing) leg of the diagram shows the successive levels of the testing aspects of V&V, with horizontal (left pointing) arrows indicating the V&V of each product against the previous product of the same level.

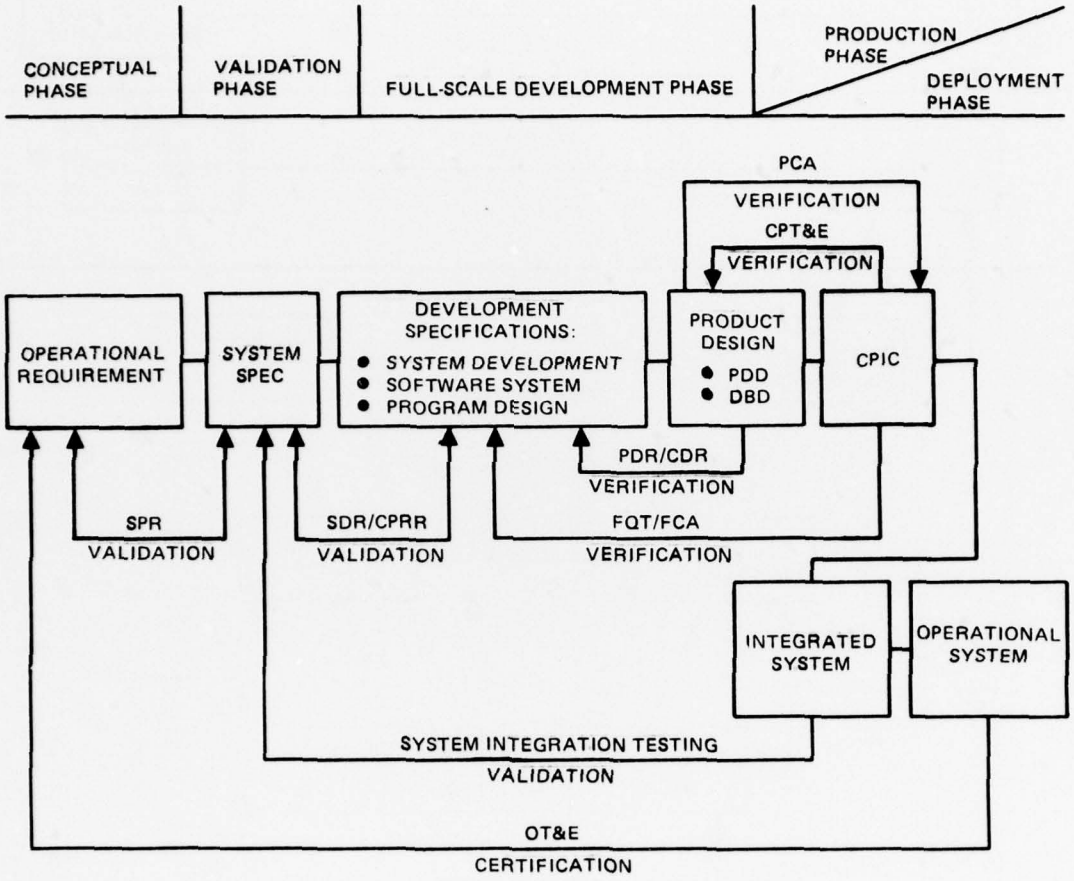

Figure 5-1. The scope of verification, validation, and certification.

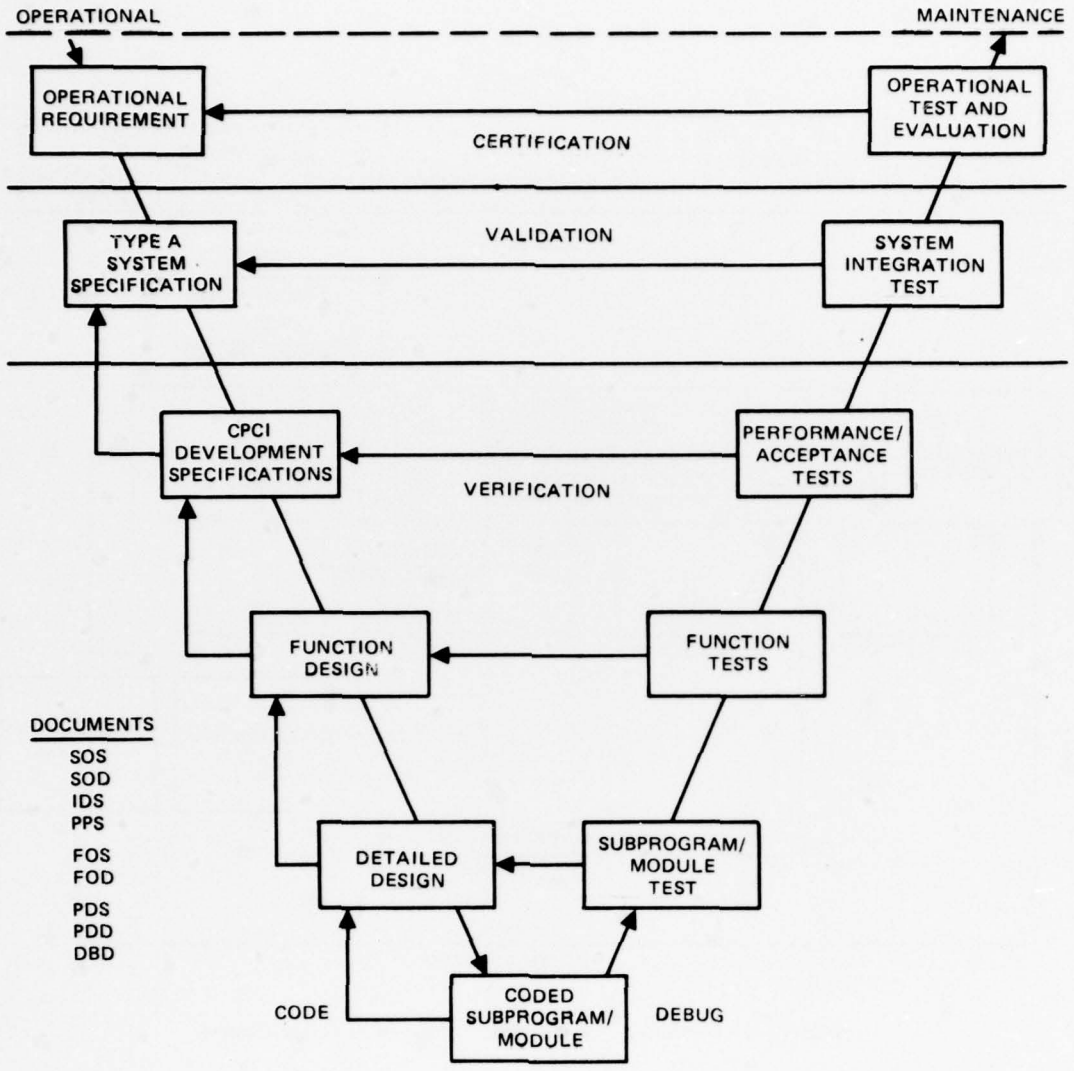

Figure 5-2. Verification, validation, and certification levels.

VERIFICATION. Verification refers to the evaluation of a single phase of the development. It is defined in this report as the iterative process of determining whether the product of selected steps of the CPCI development process fulfills the requirements levied by the previous step. Specific task areas that make up the verification process include:

- Requirements Verification. System engineering analytical activities carried out to ensure that the CPCI Development Specifications (SOS, SOD, PPS, IDS, and FOS documents called for by SECNAVINST 3560.1) reflect the requirements allocated to software from the System Specification. This verifies the Development Specifications and includes the System Design Review (SDR) and Computer Program Requirements Review (CPRR).
- Design Verification. Design evaluation activities carried out to ensure that the CPCI design (ie, FOD, PDS, PDD, and DBD documents called for by SECNAVINST 3560.1) continues to meet the requirements of the Development Specifications as the design progresses to greater levels of detail. This includes the Preliminary and Critical Design Reviews (PDR and CDR).
- Computer Program Configuration (CPCI) Verification. Consists of both the informal and formal test activities.

  Informal Verification. Consists of informal testing of the CPCI and its components carried out by the contractor according to previously documented test plans and procedures, and possibly in conjunction with an independent Verification and Validation (V&V) agency. Purpose is to assist in development, provide visibility of progress, and prepare for formal testing. Includes Subprogram/Module and Function testing.

  Formal Verification. Carried out by the contractor or an independent V&V agency in accordance with previously approved test plans, specifications, and procedures to verify that the CPCI fulfills the requirements of the Development Specifications and to provide the basis for CPCI acceptance by the JPO. Includes System/Program Performance/Acceptance Testing (PAT) and any other prescribed preliminary or final qualification testing.

VALIDATION. Validation, as used in this report, comprises those evaluation, integration, and test activities carried out at the system level to ensure that the system being developed satisfies the requirements of the System Specification. While the validation process has significant software implications, a software validation process, distinct from the system validation process, cannot be isolated, since all evaluation and test activities that make up validation are focused at the system level. Specific validation tasks include:

- System engineering activities carried out to ensure that the requirements in the System Specification accurately respond to the operational needs called for in the Operational Requirements (validating the System Specification).
- Configuration Item (CI) integration activities (including CPCI integration) carried out to assemble and check out qualified CIs as a fully functioning system (installation and checkout).
- Test Planning and execution activities carried out during System Integration testing to demonstrate that the completed system meets the requirements called out in the System Specification (validating the system).

CERTIFICATION. Certification, as used in this report, refers to the using command's agreement, at the conclusion of Operational Test and Evaluation (OT&E), that the acquired system satisfies its intended operational mission. During OT&E the system has undergone test and evaluation aimed at assuring operational effectiveness and suitability under operational conditions.

Certification starts the Development Phase and indicates the operational suitability of the system. While certification is the responsibility of the using command, the PO is involved in planning and preparing the Operational Test and Evaluation (OT&E) which concludes with certification. Further, some of the PO personnel involved in the development of test and support plans may participate in development of turnover and transfer agreements to assure continuity of liaison and coordination between the operating and supporting commands. Just as the operating command may support System Integration Testing with liaison personnel, facilities, test data, and general assistance in evaluating test results, the PO may support OT&E.

APPENDIX A:

BIBLIOGRAPHY OF STANDARDS, DIRECTIVES, AND INSTRUCTIONS

Department of Defense Instructions

5000.2	The Decision Coordinating Paper (DCP) and the Defense Systems Acquisition Review Council (DSARC)
5000.31	Interim List of DoD Approved High Order Programming Languages

Department of Defense Directives

5000.26	Defense Systems Acquisition Review Council (DSARC)
5000.29	Management of Computer Resources in Major Defense Systems

Marine Corps Orders (MCO)

P5000.10	Systems Acquisition Management Manual

Military Specifications (MIL-S)

MIL-S-52779	Software Quality Assurance Program Requirements

Military Standards (MIL-STD)

480	Configuration Control – Engineering Changes, Deviations and Waivers
483	Configuration Management Practices for Systems, Equipment, Munitions and Computer Programs
490	Specification Practices
1521A	Technical Reviews and Audits for Systems, Equipments and Computer Programs – USAF

Naval Air Systems Command Instructions (NAVAIRINST)

5230.5	Responsibility and Requirements for Preparation of Software Life Cycle Management Plans (SLCMP)

Naval Material Command Instructions (NAVMATINST)

4130.1A	Configuration Management
5200.11B	Project Master Plan
5200.27A	Transfer of Navy Tactical Digital System Software Responsibility; Procedures for

Naval Operations Instructions (OPNAVINST)

5000.42A	Weapon Systems Selection and Planning
5000.46	DCP and PM Preparation and Processing

Office of Secretary of the Navy Instructions (SECNAVINST)

3560.1	Tactical Digital Systems Documentation Standards
5000.1	System Acquisition in the Department of the Navy
5420.172B	Establishment of the Department of the Navy Systems Acquisition Review Council (DNSARC)

APPENDIX B:

EQUIVALENT AIR FORCE/NAVY SOFTWARE ACQUISITION DOCUMENTATION

Air Force Source Document	Navy Source Document
Air Force Regulations (AFRs)	
57-1, Policies, Responsibilities & Procedures for Obtaining New & Improved Operational Capabilities *	OPNAVINST 5000.42A, Weapons System Selection & Planning
65-3, Configuration Management	NAVMATINST 4130.1A, Configuration Management
80-14, Test & Evaluation	OPNAVINST 3960.10, Test & Evaluation
	OPNAVINST 3960.8, T & E of Navy Systems & Equipment
	NAVMATINST 3910.16A, NMC DT&E
800-4, Transfer of Program Management Responsibility	NAVMATINST 5200.27A, Transfer of Navy Tactical Digital System Software Responsibility, Procedure for
800-8, Integrated Logistics Support (ILS) Program for Systems & Equipment	OPNAVINST 4100.3A, Integrated Logistics Support
	NAVMAT P-4000, Integrated Logistics Specification Guide
	SECNAVINST 4000.29, Integrated Logistics Support

*With AFSC Supplement 1.

Air Force Source Document	Navy Source Document
Military Standards (MIL-STDs)	
480, Configuration Control-Engineering Changes, Deviations & Waivers	Same as Air Force
483, Configuration Management Practices for Systems, Equipment, Munitions, and Computer Programs	Same as Air Force
490, Specification Practices	System specification (ie, type A): Use MIL-STD-490 Software; development specifications: Use SECNAVINST 2560.1 terminology/items
499A, System Engineering Management	Same as Air Force
881, Work Breakdown Structure for Defense Material Items	Same as Air Force
1521A, Technical Reviews and Audits for Systems, Equipment and Computer Programs	Same as Air Force

APPENDIX C:
GLOSSARY

ADP	Automatic Data Processing
APP	Advance Procurement Plan
ARC	Acquisition Review Committee
CCB	Configuration Control Board
CDR	Critical Design Review
CDRL	Contract Data Requirements List
CEB	CNO Executive Board
CI	Configuration Item
CNM	Chief Naval Material
CNO	Chief Naval Operations
CNTR	Contractor
CPCI	Computer Program Configuration Item
CPCR	CPCI Requirements Review
CPTR	CPCI Testing Review
CPT&E	Computer Program Test & Evaluation
CRISP	Computer Resources Integrated Support Plan
CSM	Command and Staff Manual
DBD	Data Base Design Document
DCP	Decision Coordination Paper
DP	Development Proposal
DRDT&E	Director, Research, Development, Test and Evaluation
DSARC	Defense Systems Acquisition Review Council
DT&E	Development Test and Evaluation

FCA	Functional Configuration Audit
FOD	Function Operational Description
FOS	Function Operation Specification
FQR	Formal Qualification Review
FQT	Formal Qualification Testing
IDS	Interface Design Specification
NAVMAT	Naval Material Command
NDCP	Naval Decision Coordination Paper
OM	Operator's Manual
OR	Operational Requirements
OT&E	Operational Test and Evaluation
PAT	Performance/Acceptance Testing
PCA	Physical Configuration Audit
PDD	Program Description Document
PDM	Program Design Manual
PDR	Program Design Review
PDS	Program Design Specification
PM	a. Program Manager
	b. Program Memorandum
PMP	Program Management Plan
PO	Program Office
PPS	Program Performance Specification
RFP	Request for Proposal
SDR	System Design Review

SECDEF	Secretary of Defense
SI	System Integration (Testing)
SOD	System Operational Description
SOM	System Operator's Manual
SOS	System Operational Specification
SOW	Statement of Work
SRR	System Requirements Review
V&V	Verification and Validation


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